

*CHALLENGES
FOR THE
COOPERATIVE*

#ANGERSFRENCHTECH

The mission of #AngersFrenchTech is to assist the Angers IoT ecosystem and its startups. IoT is the abbreviation for Internet of Things, in other words Objects that are connected via the Internet.

Creating a Cooperative is the consolidation of this support mission and responds to the requirements of organisations in the region (see “Join the #AngersFrenchTech cooperative”). It also provides accommodation and encouragement for all initiatives that contribute to its objective.

Come and get involved in the working groups and help plan strategic action for the future, which will be implemented alongside existing initiatives:

- **“NUMA Angers IoT”**, a 4-year accelerator involving 56 French and European IoT startups, based at the Wise’Factory near the Parc des Expositions d’Angers (Angers Exhibition Centre). Romain Amblard, NUMA’s Director of Development and Partnerships who seeks out these future champions, explains: «the business accelerator for startups, which is a 5-month process here, offers secure prototyping, structuring of the business before scaling up, and manufacturing of an industrial

pre-production model by a local electronics company». It is funded by local and regional business angels, in addition to bank loans, with a dedicated fund worth €8 million.

- **“International in our DNA”** : Corine Busson-Benhammou, Director of External Relations at #AngersFrenchTech says «attending international events like the CES in Las Vegas and Shanghai and SXSW in Austin, and our broader involvement in the 2017 WEF, has enabled us to establish valuable contacts around the world that translate into opportunities to advance our regional IoT businesses involved in electronics, Smart World and manufacturing applications.»
- **“Fox’Hub”**, business centre and headquarters of the #AngersFrenchTech Cooperative located in Angers city centre; a third business hub where all stakeholders within the ecosystem can come together in a working environment that encourages the collective energy to flow.
- **“IoT Chairs”** : development of 18 academic research and teaching chairs in conjunction with universities and business schools in Angers. Research has an important role to play in responding to the challenges and issues that IoT throws up.

What does the #AngersFrenchTech Cooperative have to offer?

In addition to the objectives stated in our literature, the cooperative seeks to embody the basic principles and values of social cohesion and economic efficiency through its legal structure, and above all through the project that it supports: voting rights and the capacity to act for all members, independence and freedom of membership, mutualisation of companies, priority given to the project rather than profit in the short term, and collective action to the benefit of a particular region and industrial sector - IoT in this case.

An SCIC (special interest cooperative) has a number of advantages, including recognition of the social value of individuals and businesses that invest in the service of the region. The coming together of various stakeholders committed to developing IoT, digital and manufacturing defines the SCIC's collective interest.

Principles of governance:

- 1 member = 1 vote
- Collective and sustainable property (assets and reserves are indivisible)
- Ambitions and economic needs catered for

Everyone has their own reasons for investing, but the structure of the cooperative is reassuring: it operates at the service of its members within a defined set of objectives, in this case IoT in Angers. With your help we will create international activities and services, provide access to markets for startups, promote your business, etc; everything our members are committed to developing.

By reserving your share in the #AngersFrenchTech CICS capital, you will take part in its running and participate in attracting projects, exploring, building up a complete range of services, fundraising, showcasing research etc.

THE "NUMA ANGERS IOT" ACCELERATOR

What is an accelerator?

An accelerator is a programme that provides high-value services to startups over a period of five months: industrial and financing facilities, training and consultancy to enable them to grow quickly and achieve their objective to become world leaders. For example, prototyping platforms, mentoring, recruitment support, marketing, manufacturing and internationalisation.

NUMA, a reputable partner

NUMA is a pioneer accelerator for startups. With operations in 8 countries, it has been supporting startup businesses for over 15 years. NUMA's expertise in selecting and supporting startups is now well established. The first intake of startups will be in spring 2018 at #AngersFrenchTech's Wise'Factory premises next to the Angers Exhibition Centre.

Why Angers?

Angers is a traditional hub in Europe for electronics and is best placed to connect startups with the electronics industry of Western France «because the Angers region is where IoT is manufactured and it has an unparalleled electronics production ecosystem: 50,000 industrial jobs (25% of the sector nationally) and 4 leading medium-sized European companies that are among the top 50 worldwide: ALL CIRCUITS, ASTEELFLASH, EOLANE and LACROIX ELECTRONICS,» explains Michel Perrinet.

To this is added the high density of OEMs with electronics know-how (Thales, Valeo, Visteon, Canon, Delta Dore, Atlantic, etc.) and the fact that Angers is at the epicentre of expertise, systems and networks in Brittany, assembly for the Pays de la Loire and nanoelectronics for central Val de Loire.

This geographical area therefore has the concentration of technical skills and a network of experts that is best-placed to meet the needs of the industry of the future.

Declared ambition

Numa Angers IoT's mission incorporates the entire Grand West region of France: to attract, support and invest in the best French and European IoT startups and applications, and introduce local companies to the benefits of supplying the needs of startups by manufacturing prototypes and pre-production models, for example. One major area for improvement is the lack of early funding for startups to finance and support industrialisation.

Numa Angers IoT can remedy this situation with the programme on offer to 56 startups over four years (seven 5-month sessions each involving 8 startups). Romain Amblard, Development and Partnerships Director at NUMA, considers this to be «unparalleled in Europe, due to the concentration of business and technology expertise delivered by NUMA, the Angers digital ecosystem (#AngersFrenchTech, Cité de l'Objet Connecté, We'Network, Cap'tron, etc.) and the electronics companies in the region.»

How is it funded?

To boost the appeal of the programme and provide financing to startups, #AngersFrenchTech has underwritten an €8 million convertible bonds seed fund. The fund has already raised €3 million from local business angels, who have each contributed a minimum of €100K.

«Investing in a portfolio of more than 50 startups, spreading the risks over a wide range of projects and offering a realistic performance model is a real opportunity, and one we

can't afford to miss if we want to encourage development in the region,» says Cécile Bar, a member of ABAB, the Atlantic Business Angels Booster.

The Caisse des Dépôts (Public Deposits Fund) and banks in the region provide the rest of the financing for the accelerator's operations: Banque Populaire, Crédit Mutuel, CIC and Crédit Agricole. The Pays de la Loire Region provides a counter guarantee of up to 70% for any bank loans granted.

Significant economic spin-offs expected

An enhancement to the local «Operation Renard» accelerator (3 sessions, 24 regional project promoters supported, 17 businesses created), the economic benefits for the Grand West region and the electronics industry are estimated by #AngersFrenchTech and Numa to be in excess of €50 million per year - representing 500 potential jobs



MOBILITY

Connected infrastructures have an impact on workers' life expectancy, with maintenance and operating costs better controlled.



ENERGY

Smart grids allow to react in real time to changes in production and local consumption.



INDUSTRY

Smart assembly lines drive non-qualified workforce and productivity savings.



CITY

Sensors will allow to address urban growth challenges : congestion in public transports, energy savings, waste management.



HEALTH

After "fitness" applications, medicine takes up connected objects : chronic disease monitoring, telemedicine.



HOUSING

The connecting house, beyond the "automation" notion, allows a greater security, home-support services for elderly and quick interventions.

THE EUROPEAN IOT STARTUP ACCELERATOR

Internet of things is the next industrial revolution to come, and it will be led by startups. As Jim Tully, research director at Gartner said, "By 2018, 50% of the Internet of Things solutions will be provided by startups which are less than 3 years-old." Yet, from a European perspective, there is no existing acceleration program combining an industrial and a business approach.

NUMA has chosen to open its new acceleration program in the city of Angers, in the Pays-de-la-Loire region, an renowned electronic pole, in order to address this unique opportunity. Partnering with local industrialization experts, NUMA will accelerate 56 startups during 4 years with the City of the Connected object and Angers French Tech, offering them unprecedented acceleration services and 80k€ financing as a convertible note.

A market with tremendous potential

The IoT market is fastly growing. According to a recent study by AT Kearney and the Montaigne Institute, it will represent 15,2 billions euros in France in 2020, including 4,3 in housing, 3 in transport, 3,4 in manufacturing, smart grid and supply chain, and 2,7 in health. ¹

IoT startups are a real driver for value creation. They have already shown impressive results. One of them went public in 2016 while 34 were sold, representing a 36% growth compared to 2015.

The remaining barriers for BtoB IoT startups

Despite this unique momentum, IoT startups still face some difficulties. The phase in between prototyping and manufacturing is complex and expensive, and requires appropriate structures to help startups going from a functional prototype to a manufacturable product.

Existing financing solutions such as crowdfunding do not answer these needs and do not integrate the hardware manufacturing logic. Concerning structures, existing IoT accelerators focus mainly on software and data, only a few of them give entrepreneurs an access to fablab-type machines, which are not sufficient. Indeed, the real manufacturing process, and later distributing and repairing is not covered by any european accelerator.

We will offer an efficient acceleration program combining business and industrial acceleration taking these challenges into account.

This geographical area therefore has the concentration of technical skills and a network of experts that is best-placed to meet the needs of the industry of the future.

(1) Institut Montaigne, AT Kearney, Big Data and the Internet of Things: Making France a leader in the Digital Revolution, 2015

(2) Venture Scanner, Internet Of Things Market Report and Data, 2017

INTERNATIONAL IN OUR DNA

The WEF (World Electronics Forum) held in Angers in late October was an indicator.

It showed how the IoT can be disseminated beyond regional boundaries. Attendance by representatives of over 30 of the biggest countries involved in the electronics industry was a sign that other parts of France, Europe and the world have acknowledged the expertise of the Angers region.

Our place in the world arena for IoT is now firmly established. It was no coincidence when Gary Shapiro, President of the CTA and CES (Consumer Electronics Show) chose Angers as the venue for the WEF, whereas it is usually held in Asia or the USA: «There's a unique adventure underway here for accelerating startups in the IoT business. I've never seen this anywhere else in the world!» And let's not forget that the biggest market for electronics and IoT is in Europe. The players in the Angers ecosystem are inventing the electronics industry of the future to respond to new applications. Welcome to the Smart World!

Internationalisation is a major growth lever, for:

Aiming our businesses at new markets

For French companies, the decision to go international means the promise of higher performance levels. Companies in the Grand West region must quickly conquer markets to establish their position in a highly competitive world.

Our asset is our ability to connect with the right people to speed up business, identify potential opportunities and partners, and start prospecting... We have an open contacts list to encourage local businesses and startups to engage in internationalisation.

«As well as attendance at international fairs (CES Las Vegas and Shanghai, NRF Retail's Big Show, MWC Barcelona, SXSW Austin, etc.) we must also focus on emerging markets and Asia,» says Corine Busson-Benhammou, Director of External Relations at #AngersFrenchTech.

Attracting projects and investors by creating an effective service offer

The #AngersFrenchTech appeal must attract entrepreneurs, experts, investors and funding sources from around the world. The strength of a network lies in its ability to establish connections between its members.

With our involvement in international activities, and with the power of the WEF and the contacts we have made through it, we are constantly forming new links every day with stakeholders in the global electronics and technology arena. With these captains of industry, we are creating the conditions to facilitate business opportunities for our local businesses.

Our offer will comprise a package of services for IoT players: accommodation,

market analysis, sector monitoring, introductions, legal and administrative

Identifying funding sources

Many foreign investors are eager to get involved in IoT and its applications. We operate within the smart world and propose to solicit foreign venture capitalists in order to showcase our strengths and sell the Angers IoT region as a destination.

A RALLYING POINT FOR BUSINESSES OF THE FUTURE: "FOX'HUB"

The Cooperative needs a rallying point for developing its activities. Fox'Hub is an effective hub for meetings and exchanges within the Angers ecosystem and a focal point for startups, entrepreneurs, project leaders, communities, and French and foreign experts for expertise, and as such must be located at the very heart of the city to offer the greatest possible visibility and enhanced accessibility for our target audience: startups. As the main technology hub in the Angers region, Fox'Hub will be a third location:

- for the acceleration of startups with international objectives
- for startups, businesses and major players to disseminate innovation
- acting as a European reference centre and creator of value

- providing accommodation (co-working, offices, meeting rooms, etc.)
- for startups, entrepreneurs, project leaders, communities, and French and foreign experts
- for activity and exchange which is open to the public and suitable for meetings, business hosting, training, etc.
- open for events hosting, networking and national and international exposure

3 ambitions du Fox'Hub

- To locate businesses and startups at the heart of the innovation ecosystem in an effective international showcase that combines excellence and activity in an atmosphere of convivial exchange
- To become a European hub offering high-potential startups the best support for achieving hypergrowth, with the goal of turning them into the international tech champions of the future

- To become the catalyst for French Tech initiatives through networking and national and international exposure for stakeholders across the entire ecosystem

Fox'Hub operations

To provide a total solution for ambitious project directors: to develop their ideas, access key resources, test the market, accelerate their development, prepare for internationalisation, etc. Our aim is to decompartmentalise the various sectors, encourage communication channels with related digital industries and represent an entry point for promoters of innovation.

To facilitate synergies and the sharing of tools and resources available in the ecosystem, and encourage the process of open innovation.

Fox'Hub residents

Around 40 innovatory businesses (startups and others), 150 to 300 people on average on site, across two separate but complementary spaces:

- A «tertiary» area of about 2000m²

dedicated to development : acceleration and accommodation, co-working, meeting the public; eating places and places for get togethers; meeting rooms, a web video studio, etc.

- An additional 400m² of modular space for hosting temporary exhibitions and events, with catering, logistics, terrace, etc.; also available in the evenings.

Events organised at Fox'Hub (conferences, receptions, demos, etc.) will contribute to the innovatory image and character of Angers French Tech.

The Fox'Hub will be located on Rue Franklin Roosevelt at the Central Post Office in Angers city centre.

CREATION OF 18 IOT CHAIRS

Angers is the second biggest city in France for academic study, with 40,000 students, 1100 researchers, 4 university campuses and 7 «grandes écoles» that welcome international students (L'Etudiant 2016).

Since we have all this research capacity in the region, we held talks with the research laboratories to find out what IoT topics they are currently researching.

Seven institutions responded: ENSAM, ESAIP, ESEO, ESSCA, ESA, AU and UCO.

Internationalisation is a major growth lever, for:

**7 institutions responded :
18 topics* were submitted**

ESSCA

- **#1** Digital and IoT: Emergence of new business models

ENSAM

- **#2** Intelligent and communication structures and materials
- **#3** Perform', training performance

ESA

- **#4** Connected agriculture
- **#5** Urban agriculture

UA

- **#6** Connected objects and phygital commerce

- **#7** Connected objects and health
- **#8** Connected objects and Big Data

UCO

- **#9** Technological innovation and ethics

ESEO

- **#10** Big Data analytics: application in smart cities
- **#11** Robustness and reliability of on-board monitoring systems for mechanical structures
- **#12** Cognitive assistant and personal aide
- **#13** Energy efficiency of IoT sensors
- **#14** Electromagnetic compatibility (EMC) of connected objects
- **#15** Interoperability and security of IoT objects

ESAIP

- **#16** Cyber-security and Internet of Things
- **#17** Green IT & Internet of Things
- **#18** Internet of everything & big data

* The submitted topics are at different stages of development: some are at the final stage of funding for the chair, others are proposed research interests for the purpose of establishing a joint chair, taking into account the requirements of the sponsor company. Cooperation between different institutions may be considered for certain topics.

Testimonies from three institutions :

- UCO: «Technological innovation and ethics are fundamental challenges for which research must provide guidance in choosing our future»
- Christophe Rouvrais, Director of ESAIP : «This initiative to combine IoT research topics within the region has been an opportunity for us to establish our two research and teaching chairs, in Cybersecurity & IoT and Big Data & IoT»
- Bertille Thureau, director of the Agricultural Mutations Chair at ESA : «Our Chair in Agricultural Mutations was created at the same time as this classification of chairs proposed by #AngersFrenchTech. Connected objects are an essential means of evolution for our applications sector»

Companies with connected object projects in any business sector can approach #AngersFrenchTech to confirm which Chair could support their R&D activity. They identify a relevant topic and meet with the researchers to construct a programme and draw up a sponsorship agreement directly with the institution.

The role of #AngersFrenchTech is to promote these chairs and suggest sponsorship opportunities with large companies interested in Connected Objects and the development of the Angers region.

Link to the list of 18 IoT Chairs:
<https://lc.cx/NWHw>

HISTORY OF #ANGERSFRENCHTECH

Approved in June 2015, #AngersFrenchTech is the collective label for IoT and manufacturing. It links startups with electronics and digital industries, supports development in the region and accelerates innovative projects within companies.

A «Silicon Valley» in Europe

By setting up relationships, partnerships and events, #AngersFrenchTech promotes the entire Angers ecosystem at local, national and international levels. The goal is to make Angers a European and global reference point for IoT and for the acceleration of IoT startups.

A huge step towards internationalisation has been taken thanks to our relationship with Gary Shapiro. This valuable connection with the President of the Consumer Electronics Show (CES), which is the biggest consumer electronics and digital consumer event, promoted Angers' bid to host a second event, this time for professionals: the 22nd WEF (World Electronics Forum).

As part of the 2017 WEF, #AngersFrenchTech organised and managed a workshop on «Transformation: Innovation as the Driver of the Smart World.» It was geared towards improving the link between French Tech startups in the IoT ecosystem and the new industrial France, with the aim of stimulating innovation and development of the Smart World for all companies.

Four strategic approaches

- Identifying, supporting and anchoring startup talents. Using calls for projects with large groups like Orange and support from local authorities, and giving startups the opportunity to carry out test & learn procedures
- Structuring and uniting the Angers IoT ecosystem

Portrait of the #AngersFrenchTech Regional Delegate

The #AngersFrenchTech Regional Delegate, Michel Perrinet, is a training engineer. Passionate about computer science and innovation, he established Octave in Angers in 1996, when he was 21. 20 years later Octave is still experiencing strong growth, and has released an innovative solution for omnichannel trading that now employs 70 people and is one of Angers' digital gems.

Having pioneered a number of technological revolutions in recent years (SAAS, e-commerce and omnichannel), this energetic entrepreneur has taken the bold decisions essential to carve out a niche and stay on course in an extremely competitive market which is constantly evolving. Since 2014, Michel Perrinet has been committed to developing his workforce and challenging traditional models of hierarchy. Octave therefore forms part of the still restricted circle of «liberated enterprises.»

Offering his services freely, he was instrumental in obtaining the French Tech label for the city of Angers in June 2015, and it was natural that he should be given the title of Regional Delegate of Angers French Tech. His mission is to coordinate the stakeholders in the IoT Tech ecosystem around a common vision on the economic development of the region.

«The appearance of connected objects marks the beginning of a major revolution in global electronics. One small aside on the topic: the electronics revolution invaded our daily lives in the 1980s and 90s, as has the digital revolution in the 2000s and 2010s. The virtual and physical worlds are now one, and have given birth to the connected object, which is both a consumer product and a transmitter of data. Our region has all the assets to be a world reference in IoT manufacturing. All these arguments convinced Gary Shapiro to locate the WEF in Europe for the second time in 12 years, whereas it has usually been held in Asia or the United States. We are extremely proud to be the instigators of this dynamic.»
Interview for the City of Angers at the «Angers Connectez-vous au futur» evening on 11 May 2017

Source: Ouest France.fr - «Insolite. A Angers, une entreprise fonctionne sans hiérarchie! « (Out of the ordinary: a company in Angers operates with no hierarchy!) [07/11/2016]

- Assisting experimentation to move onto the industrial phase. Angers is a test city for connected objects. The particular demographic makeup of the area, reflecting users and user trends, makes it a kind of open-air laboratory for setting up design consultancies, conducting consumer surveys, open-data programmes and data pooling, and installing “smart” urban devices.
- Coax them here, send them over there: international partnerships based on the «soft landing» mechanisms set up between Angers and Austin enable startups in Angers and other countries to launch in other markets and develop their services. Finally, the affiliation with the French Tech network provides privileged access to major global hubs comprising entrepreneurial and investor communities: a key international anchor point for startups.

IOT STATISTICS

There are more than 15 billion internet-connected objects in the world today, and there will soon be 6 objects for each person, making a total of 50 - 80 billion by 2020 (source: Idate et Gartner).

Smartphones are in the lead, with 1.5 billion sold in 2016. Also global markets like connected sport, which is expected to reach \$18 billion by 2018 (a study by Les Echos) and e-health at \$400 billion within five years.

France and the West

The Grand West region of France has an industrial tradition and the highest density of electronic production sites in France, representing 25% of the French job market in the electronics industry - 50,000 jobs. In the Pays de la Loire area:

- 25,000 jobs
- 250 researchers
- 4000 students

Angers is at the geographical heart of this region, where champions in the 7 strategic Smart World areas are located. These include:

- smart agriculture: see Végépolys and Terrena
- smart health: Angers University Hospital simulation centre
- smart wear: Mulliez Flory in Cholet and Autotonex
- smart security: Thales Communications & Security in Cholet
- smart factory: Wise'Factory and Cité de l'Objet Connecté (City of Connected Objects)
- smart mobility: 24-hour circuit and

«Highway to Tech» in Le Mans with STMicro and ID4Car

- smart energy: EDF and S2E2

There are 4 medium-size electronic subcontracting companies within the top 12 in Europe and within the top 50 worldwide for electronic production services located within less than an hour and a half of Angers: All Circuits, AsteelFlash, Eolane and Lacroix Electronics.

- over 900 companies
- over 7000 jobs
- 37 higher education courses

Between 2015 and 2016, 14 innovative IoT startups in Angers raised €50 million of funding.

In France, the connected objects market is expected to be worth over €15 billion by 2020, including : €4.3 billion in housing, €3.4 billion in manufacturing, smartgrid and supply chain, €3 billion in transport and €2.7 billion in health (Source: Institut Montaigne - AT Kerney.)

Europe and the World

The European electronics market is the world's second biggest market and the digital equipment market is valued at over \$1 trillion. This figure goes up to \$4 trillion if we add related expenditure: content, services and other equipment, and over \$5 trillion in expenditure related to digital products and services by 2020. Over 65% of our total spending is now on services.

2020. Nous payons aujourd'hui + de 65% du total de nos dépenses dans des services.

According to ObjetConnecté.net and IDC (20/06/2017):

- Spending in Europe on manufacturing, transport and above all energy (hardware such as connectivity modules, sensors etc., software, services and connectivity solutions for IoT) will reach \$274 billion in Western Europe by 2021. The Asia Pacific region (excluding Japan) is forecasted to be the region with the biggest IoT-related spending (\$455 billion), ahead of the United States (\$421 billion) and Western Europe (\$274 billion).
- Given the weight of the IoT production industry sector in expenditure by applications (use cases), manufacturing operations are expected to represent \$105 billion of investment in IoT in 2017, ahead of :
- *Smartgrid applications for electricity, water and gas networks (\$56 billion)*

- *freight management operations (\$50 billion)*
- *productive asset management applications (\$45 billion)*
- *IoT applications for connected buildings (\$40 billion)*
- Consumer applications are expected to grow by an average of 19.8% per year by 2021. The strongest growth is expected in airport automation (+33.4% per year) and electric vehicle charging systems (+21.1%)

According to Accenture, the IoT industry could be contributing up to \$500 billion to the world economy by 2020 (\$20 billion in 2012). For industrialists, applications for the optimisation of production processes and real-time adjustment of the manufacturing process based on received data could reduce production costs by between 5 and 12.5% by 2025, according to McKinsey.